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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,099	02/02/2004	Makarand S. Shinde	FACT-01008US1	2047
23910	7590	01/25/2005	EXAMINER	
FLIESLER MEYER, LLP FOUR EMBARCADERO CENTER SUITE 400 SAN FRANCISCO, CA 94111			CHAN, EMILY Y	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/771,099	SHINDE ET AL.	
	Examiner	Art Unit	
	Emily Y Chan	2829	

-- *Th MAILING DATE of this communication appears on th cov r sheet with th correspond nce address --*
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16,26-31 and 36-49 is/are pending in the application.
- 4a) Of the above claim(s) 17-25 and 32-35 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-31 is/are allowed.
- 6) ☐ Claim(s) 1-11,14-16,36-42 and 47-49 is/are rejected.
- 7) ☐ Claim(s) 12,13 and 43-46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2-2-04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-16,26-31 and 36-49, drawn to a probe card assembly for testing a device, classified in class 324, subclass 754.
- II. Claims 17-25, drawn to a probe card assembly for testing a device, classified in class 324, subclass 761.
- III. Claims 32-35, drawn to a probe card assembly for testing a wafer, classified in class 324, subclass 755.

The inventions are distinct, each from the other because:

Inventions II and I are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as a probe card assembly comprising a second substrate which includes routing lines used to electrically connect the probe contact to a testing system. Whereas the probe card in Group II is directed to a support pin contacting structure such as a pin contacting a gimble against a metal plate and a pin supporting an elastomer pad against the substrate. See MPEP § 806.05(d).

Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as a probe assembly comprises a support removably contacting the second side of the

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substrate and the support comprises a pin contacting structure such as a pin contacting a gimble against a metal plate and a pin supporting an elastomer pad against the substrate. Whereas the probe card in Group III comprises a land grid array (LGA) of electrical connection pad and an interpose having electrically conductive spring contact on each side to connect the pads of the printed circuit board (PCB) to the pads of the LGA of the substrate. See MPEP § 806.05(d).

Inventions I and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as a probe card assembly comprising a second substrate which includes routing lines used to electrically connect the probe contact to a testing system. Whereas the probe card in Group III comprises a land grid array (LGA) of electrical connection pad and an interpose having electrically conductive spring contact on each side to connect the pads of the PCD to the pad of the LGA of the substrate. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II and the search required for Group II is not required for Group III, restriction for examination purposes as indicated is proper.

During a telephone conversation with applicants' attorney Mr. Thomas Ward on 1-11-05 a provisional election was made with traverse to prosecute the invention of I, claims 1-16, 26-31 and 36-49. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17-25 and 32-35 are withdrawn from further

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consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Eldridge et al, U S Patent No. 6,483,328 (Eldridge et al 328).

Eldridge et al ('328) disclose a probe card assembly for testing a device (311) (see Figs 1-3) as claimed , comprising:

a substrate (324) with probe contact (336) on a first surface (bottom surface of 324);

a probe card (321) electrically connect the probe contacts (336) to a test system (see Col. 3, line, 23 "tester"),

an electrical connection means (325) to connect the probe contract (336) to the probe card (321), and

a support means (335) positioned against a second surface (top surface of 324) substantially opposite the probe contact (336) to transmit probe force introduced when the probe contacts are urged against corresponding contacts on the device (311) being tested.

Therefore, Eldridge et al ('328) anticipate the claimed invention.

2. Claims 1-4, 6-12 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by the applicants' admitted prior art (Fig. 2).

With respect to claim 1, applicants' admitted prior art (Figs.1-2) shows a probe card assembly for testing a device (14) as claimed, comprising:

a substrate (45) with probe contact (16) on a first surface (bottom surface of 45)
a probe card (18) electrically connect the probe contacts (16) to a test system (4),

an electrical connection means (24, 32) to connect the probe contract (16) to the probe card (18), and

support means (50,52,56,58,59,62,64,66 and 68) positioned against a second surface (top surface of 45) substantially opposite the probe contact (16) to transmit probe force introduced when the probe contacts are urged against corresponding contacts on the device (14) being tested.

With respect to claim 2, applicants admit that a substrate comprises a ceramic material is known in the art (see page 6, lines 8-9).

With respect to claim 3, applicants admit that a substrate comprises an organic material is known in the art (see page 11, last line).

With respect to claim 4, applicants' admitted prior art (Figs.1-2) shows that the support means comprises a screw element (58, 59).

With respect to claims 6 and 8, applicants' admitted prior art (Figs.1-2) shows that the support means comprises a gimble (66,68) removably contacting a rigid support member (50, 62,64) attached to the substrate (45).

With respect to claim 7, applicants' admitted prior art (Figs.1-2) shows that the support means comprises a rigid support means (50) attached to the substrate (45) opposite the probe contact (16).

With respect to claim 9, applicants' admitted prior art (Figs.1-2) shows that the electrical connection means (24, 32) comprises an interposer (32).

With respect to claim 10, applicants' admitted prior art (Figs.1-2) shows that the electrical connection means (24, 32) comprises pogo pins (see page 3 of the specification, line 5).

With respect to claim 11, applicants' admitted prior art (Figs.1-2) shows that the probe card assembly further comprises a frame (54) provided around a peripheral edge of the substrate (45) and the frame (54) includes a horizontal extension (60) extending over the surface of the substrate (45), wherein the probe force are transmitted by the support means to the frame (54).

With respect to claims 14-15, applicants' admitted prior art (Figs.1-2) shows that the probe card assembly further comprises: a printed circuit board (PCB 30), a bracket (52), a leaf spring (56) and an interposer (32).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over by applicants' admitted prior art (Figs. 1-2) in view of Khandros et al U S Patent No. 6,690,185 (Khandros et al 185).

The applicants' admitted prior art (Fig. 2) does not disclose an elastomer pad and a second substrate attached to a second surface of the first substrate.

Khandros et al ('185) disclose a probe card assembly (see Fig. 2) and particularly teach a first substrate layer (76) having probe contacts (80) on a first surface (78), the first substrate comprising a first material (see Col. 6, lines 42-43) and a second substrate (74) attached to the second surface of the first substrate (76) including routing lines (84) electrically connecting the probe contacts (80) and connecting the probe card (see Col. 6, lines 60-65 and Col. 8, lines 1-2). Khandros et al ('185) also teach that the second substrate (support substrate 74)(see Abstract, line 3) comprises a second material having a lower flexural strength than the first material (see Col. 9, lines 27-30).

Moreover, Khandros et al ('185) disclose a support means comprising an elastomer pad (see Col. 19, line 14 –15).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to incorporate the second substrate of Khandros et al ('185) into the applicants' admitted prior art so that the probe card comprises the first and second substrates as claimed for the expected benefit of providing substrates which are preferably relatively inexpensive and conducive to successfully yielding spring contacts as disclosed by Khandros et al ('185) (see Col. 4, lines 1-2).

4. Claims 36-42 and 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over by applicants' admitted prior art (Figs. 1-2) in view of Khandros et al U S Patent No. 6,690,185 (Khandros et al 185).

With respect to claims 36, 40 and 48, the applicants' admitted prior art (Figs. 1-2) for testing a device (14), comprising:

a substrate (45) with probe contact (16) on a first surface (bottom surface of 45), straight through (66,68) and routing lines (24) providing connections to a test system (4).

The applicant admitted prior art (Figs. 1-2) does not disclose a second substrate attached to a second surface of the first substrate.

Khandros et al ('185) disclose a probe card assembly (see Fig. 2) and particularly teach a first substrate layer (78) having probe contacts (80) on a first surface (bottom surface) of the first substrate (78) comprising a first material (see Col. 6, lines 42-43) and a second substrate (76) attached to the second surface (top surface) of the first

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substrate (78) comprising a second material. Khandros et al ('185) also teach that the first material is more rigid than the second material second different than the first material (see Col. 6, line 41).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to incorporate the second substrate of Khandros et al ('185) into the applicants' admitted prior art so that the probe card comprises the first and second substrates as claimed for the expected benefit of providing substrates which are preferably relatively inexpensive and conducive to successfully yielding spring contacts as disclosed by Khandros et al ('185) (see Col. 4, lines 1-2).

With respect to claims 37-39, Khandros et al ('185) clearly disclose that the substrate can be any of a variety of material such as organic material or ceramic material (see Col. 8, lines 66-67 and Col. 9, lines 1-7).

With respect to claims 41 and 49, Khandros et al ('185) disclose that the second substrate (76) is attached to the first substrate (78) By solder joint (134) (see Col. 6, line 41).

With respect to claims 42 and 47, the applicants' admitted prior art (Figs. 1-2) disclose a printed circuit board (30), an bracket (52), leaf springs (56) and an interposer (32).

Allowable Subject Matter

5. Claims 26-31 allowed.

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6. Claims 12-13 and 43-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an examiner's statement of reasons for allowance:

Claims 12-13, 26 and 43 are indicated allowable because the prior art does not teach or suggest a probe card assembly comprising all the elements in combination recited in claims 12-13 and 26. Specifically, the prior art does not teach or suggest the horizontal extension of the frame includes a load support member extending vertically from a surface of the horizontal extension to engage the first surface of the substrate in an area separated from the peripheral edge of the substrate recited in claims 12 and 26. The prior art also does not teach or suggest a second membrane provided between a first membrane and the substrate to engage the substrate in an area separated from the peripheral edge of the substrate recited in claim 13. Claims 27-31 and 44-46 are dependent on claims 26 and 43 respectively and are indicated allowable accordingly.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nagar et al, U S Pub No. 2004/0239530 disclose a probe card assembly (see Fig.2) which includes a substrate with an organic material or ceramic material (see Page 2, paragraph 0023, line 4).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Y Chan whose telephone number is 571-272-1956. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 571-272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EC
1-19-05


DAVID ZARNEKE
PRIMARY EXAMINER
1/21/05